The effect of mandatory IFRS adoption on the value of cash: the case of Canada

by

Dan Gong

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Abstract

I examine the change in the marginal value of corporate cash in Canadian firms pre and post the adoption of IFRS in Canada. I find that the marginal value of cash decreased significantly in Canadian firms following IFRS adoption. This decrease is significant relative to the change in the value of cash for a matched US control sample. Advocates of IFRS argue that one of its main benefits is the fact that a uniform set of accounting standards should help to facilitate cross-border financing. This improved access to cross-border financing is most plausible for firms with similar foreign counterparts, and is most important for those firms who exhibit the greatest need for external capital. I find that the post-IFRS decrease in the marginal value of cash is most evident for firms that have a larger number of similar firms in non-Canadian IFRS regimes, and for firms with high growth potential and low availability of internal cash. These findings are consistent with the contention that the decrease in the marginal value of cash is attributable to Canadian firms' improved access to external financing after IFRS adoption.

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1. Introduction

The last decade has witnessed widespread adoption of IFRS and increasing harmonization of accounting standards around the world. Many countries have already switched from domestic generally accepted accounting principles (GAAP) to IFRS. In 2005, countries and areas such as Australia, Hong Kong and countries in the European Union (EU) adopted IFRS by mandate. The 2005 large-scale adoption of IFRS across many countries has attracted much attention from academics. Extensive empirical research reveals the capital market benefits after mandatory IFRS adoption in EU countries (for an overview, see Brüggemann, Hitz, & Sellhorn, 2012). However, researchers have raised the concern that studies of mandatory adoptions are susceptible to the problem of confounding events and questioned whether the observed effects are driven by the mandatory adoption of IFRS per se or by concurrent confounding factors (De George, Li, & Shivakumar, 2016).

I propose to extend the IFRS literature by examining the effect of IFRS adoption on the marginal value of cash in Canadian firms. Canadian firms' mandatory adoption of IFRS became effective for public firms with fiscal years beginning on or after January 1, 2011. Unlike countries in the EU, Canada has not experienced significant changes in legal enforcement around IFRS adoption. Hence, Canada provides a clean setting to examine the effect of IFRS adoption.

The marginal value of corporate cash is an important issue because firms maintain large cash holdings that account for a significant portion of firms' assets.[1] Cash holdings are important for firms to succeed in product market competition (Fresard, 2010), to take advantage of investment opportunities that increase firm value (Denis & Sibilkov, 2010)

[1] As of December 2012, Canadian firm held approximately C$600 billion cash (Royal Bank of Canada. 2012).
[2] http://www.ifrs.org/use-around-the-world/why-global-accounting-standards/

and to reduce refinancing risk (Harford, Klasa, & Maxwell, 2014). Interestingly, the finance literature documents that the marginal value of cash to shareholders can be quite different from its face value conditional on firms' access to capital markets, their investment opportunities, and their susceptibility to agency problems (see e.g. Faulkender & Wang, 2006; Dittmar & Mahrt-Smith, 2007; Downar, Ernstberger, & Link, 2018). Faulkender & Wang (2006) and Denis & Sibilkov (2010) demonstrate that $1 of additional corporate cash is worth more than $1 to shareholders for a firm that has limited access to capital markets, especially if that firm also has high growth opportunities. As the firm's access to external capital increases, the marginal value of internal cash is reduced.

I choose to examine the value of cash because it provides a broader means to evaluate the *overall* capital market benefits of IFRS in Canada than does a study that evaluates a single change in capital markets. Extant literature on the capital market benefits of IFRS adoption has focused on individual effects post IFRS such as the cost of equity capital and institutional ownership. Researchers have found that after IFRS adoption firms have a low cost of capital, better information environment and higher institutional ownership (see e.g. DeFond, Hu, Hung, & Li, 2011; Li, 2010; Tan, Wang, & Welker, 2011) . However, researchers also find that the accounting quality of mandatory IFRS adopters decreases after IFRS adoption (Ahmed, Neel, & Wang, 2013), which may deter potential investors. Ex ante, the *overall* impact that mandatory IFRS adoption can bring to firms in the capital markets is not clear.

The stated goal of the IFRS Foundation is to develop a single set of global financial reporting standards that bring transparency, accountability, and efficiency to

financial markets around the world.[2] To the extent that the adoption of IFRS in Canada achieves the goals of the IFRS Foundation, Canadian financial statements post IFRS should be both more transparent and more understandable to investors around the world. The enhanced financial report comparability should increase Canadian firms' access to foreign private and/or institutional investors, and to public and/or private debt investors. If, however, accounting quality decreases after IFRS adoption, this may make financial reports more opaque and therefore make Canadian firms less attractive to investors. It is not clear which effect will dominate or whether these impacts after IFRS adoption will cancel each other out. Examining the change in the marginal value of cash aggregates the capital market impacts of IFRS adoption into a single measure.

To my knowledge, the only piece of academic literature to examine the relation between the adoption of IFRS and the marginal value of cash is Hong (2013). Hong focuses on firms with a dual-class share structure and uses the marginal value of cash as an alternative proxy for the change in private control benefits after the 2005 mandatory adoption of IFRS. She finds that the marginal value of corporate cash increases post IFRS, consistent with the contention that IFRS reduces the benefits of private control, thus rendering liquid corporate assets more valuable to non-voting shareholders. However, as Hong acknowledges, this result may be affected by concurrent legal enforcement changes related to IFRS around the 2005 adoption. Using a clean setting in Canada absent concurrent legal enforcement changes, I find that the value of cash *decreases* after IFRS adoption, which is opposite to Hong's results. The decrease in the value of cash is more likely due to the switch of accounting standards from Canadian GAAP to IFRS than to

[2] http://www.ifrs.org/use-around-the-world/why-global-accounting-standards/

confounding factors, since my use of a Canadian setting and a control sample as described below allows for cleaner tests to isolate the effect of IFRS adoption.

Using a difference-in-differences analysis, I examine the change in the marginal value of cash in Canadian firms after Canada's adoption of IFRS in 2011 compared to the change in the value of corporate cash for a control sample of US firms matched on industry and size.[3] My results indicate that the marginal value of Canadian corporate cash decreases in the post-IFRS period, consistent with the explanation that the implementation of IFRS provided Canadian firms with better access to external capital. My findings hold after being subjected to a battery of robustness tests that include excluding Canadian firms that are cross-listed in the US, using alternative matching procedures, and controlling for the possibility of differences in the measurement of financial statement variables after IFRS adoption.

To further support the contention that the decrease in the marginal value of cash in Canadian firms is due to better access to capital markets resulting from higher cross-country comparability in accounting standards, I demonstrate that Canadian firms who have a greater number of similar peers in non-Canadian IFRS regimes exhibit a significantly greater post-IFRS reduction in the marginal value of cash than do Canadian firms with less similar peers in IFRS regimes outside of Canada. The enhanced comparability encourages foreign investments by making financial statements easier for non-resident investors to interpret. I also find that the post-IFRS decrease in the marginal value of cash in Canada is highly evident in firms facing financial constraints, particularly when those firms also exhibit high growth opportunities.

[3] In robustness checks, I demonstrate that my results also hold when I replace the US control sample with a matched sample of Australian firms.

My finding that the marginal value of cash decreases after IFRS adoption in Canada is unlikely to be driven by concurrent unobserved factors since my setting provides an opportunity for clean identification of the IFRS effect. Canadian firms are likely serious adopters that can reap benefits from IFRS adoption (Daske, Hail, Leuz, & Verdi, 2013). Canada is a common law country with stronger investor protection and higher legal enforcement than civil-law countries (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1998). Accounting quality in Canadian firms has been high historically (see e.g. Ball, Kothari, & Robin, 2000). Additionally, listed companies in the Toronto Stock Exchange (TSX) are mainly audited by Big 4 audit firms (Blanchette & Racicot, 2013), which suggests high audit quality (Defond & Zhang, 2013). For all of the reasons above, it is hard to argue that Canada, with its strong legal enforcement and past record of high accounting quality, will not enforce IFRS seriously. This also implies that an examination of the effects of IFRS in Canada is a very strong test, since we are testing the effects of a change from an already high accounting quality environment to a potentially even higher quality accounting environment.

In addition, the use of a matched US control group mitigates the concern that any effect after IFRS adoption in Canada actually comes from unobserved confounding factors. US firms maintain the use of US GAAP throughout the implementation of IFRS in Canada. The geographic proximity between the US and Canada, as well as the similarities in the economic climate and governance regimes between the two countries, imply that US firms function as a good control for factors other than changes in accounting standards that might have affected the valuation of North American cash over

my time period of interest. In robustness tests, I demonstrate that my results continue to hold if I replace the US control sample with an Australian control sample.[4]

My findings make several contributions. First, the results uncover the *overall* impact of IFRS adoption on firms in the capital markets. Previous literature examines the individual effects of IFRS adoption and the inconclusive findings obfuscate the understanding of the overall impact of IFRS adoption. My findings illustrate that better access to external financing dominates other concerns or changes after IFRS adoption, as evidenced by the decrease in the marginal value of cash. Second, my work both complements and extends earlier work on IFRS adoption by providing a clean identification of IFRS effects. Switching from local GAAP to IFRS can significantly benefit firms even without any concurrent legal enforcement change. Additionally, my research adds to the value of cash literature by showing that the change in accounting standards has a significant impact on the marginal value of cash. The implementation of a high-quality accounting standard that is comparable across many countries reduces the value of cash. Previous literature on the value of cash mainly focuses on firm-specific characteristics, such as governance and financial constraints. My findings illustrate that accounting standards also matter to shareholders when they value corporate cash holdings.

[4] Canada and Australia have similar GDP per capita and a similar industry structure. In both countries the service sector dominates, and the primary sector (agriculture and mining), while small in terms of its relation to GDP, is nonetheless important since it accounts for a significant portion of the exports (Singh, Carasco, Svensson, Wood, & Callaghan, 2005) .

2. Hypothesis development

When firms switch from local GAAP to IFRS, financial reporting comparability to firms in other IFRS adoption countries increases (Yip & Young, 2012). The accounting numbers also become more comparable to US GAAP when firms apply IFRS than when they apply local GAAP (Barth, Landsman, Lang, & Williams, 2012). IFRS and Canadian GAAP are both principle-based and subject to similar conceptual foundations (Blanchette & Desfleurs, 2011). However, Brochet et al. (2013) show that even in countries where local GAAP is similar to IFRS, firms still reap capital market benefits from improved comparability. Higher comparability of financial reports expands firms' access to external financing. After IFRS adoption in EU countries, foreign mutual fund ownership increases (DeFond et al., 2011). Institutional investors' demand for equities also increases with the increase concentrated in countries with strong legal enforcement and significant differences between domestic GAAP and IFRS (Florou & Pope, 2012). In the post-IFRS period, firms are more likely to issue bonds than to take out private loans, and they also have lower bond yield spreads (Florou & Kosi, 2015).

IFRS adoption also facilitates cross-border financing in countries that have mandatorily adopted IFRS. Firms exhibit higher propensity to, and intensity of, cross-listing after IFRS adoption, and they are more likely to list equities in larger and more liquid markets than before (Chen, Ng, & Tsang, 2015). As firms are able to seek funding from a larger group of capital providers, banks are willing to accept more risk and extract lower rents as compared to pre-IFRS (Jayaraman & Kothari, 2016). Yu and Wahid (2014) demonstrate that even investors in countries that have not yet adopted IFRS increase their

investments in countries that adopt IFRS if the implementation of IFRS reduces accounting differences between the two countries.[5]

It is necessary to acknowledge that the capital market implications of the Canadian switch to IFRS are not necessarily analogous to the capital market implications for European countries that switched to IFRS. The US, Canada's major trading partner, has maintained its use of US GAAP while other countries, including Canada, switched to IFRS. US investors likely understood Canadian GAAP well since Canadian firms have a long presence in US market. It is thus not obvious that the capital inflow into Canada from the US should increase following IFRS adoption. If US investors were more familiar with Canadian GAAP than they are with IFRS, the capital inflow from the US after IFRS adoption may even decrease. A post-IFRS increase in foreign capital flow to Canada as a result of comparability benefits in international accounting standards assumes that non-US foreign investment in Canada has increased more than any potential decrease in US foreign investment. The above reasoning leads to my first hypothesis on the relation between the implementation of IFRS and the marginal value of cash in Canadian firms:[6]

Hypothesis 1: The marginal value of cash will decrease after IFRS adoption.

After Canada's switch to IFRS, foreign investors from other IFRS-adoption countries have the comfort of knowing that they understand the GAAP under which Canadian companies' financial statements are prepared as well as they understand the

[5] Of course, as Hong (2005) points out, all of the above findings suffer from the unavoidable confound that many countries improved legal enforcement concurrent with the adoption of IFRS.

[6] A confounding factor that I need to consider is that Canadian firms may have reduced cash holdings in anticipation of the implementation of IFRS due to the expectation of an increase in external financing. Faulkender and Wang (2006) show that the marginal value of the next dollar of cash is lower when firms' cash holdings are higher. To the extent that Canadian firms reduced cash holdings in anticipation of IFRS, this biases against observation of my hypothesized results. I examine this issue in Section 4 of the paper.

GAAP under which financial statements are prepared in their own country. Defond, Hu, Hung, and Li (2014) demonstrate that, following the 2005 mandatory adoption of IFRS in the European Union (EU), foreign mutual fund ownership increased for firms exhibiting a large expansion in the number of industry peers now reporting under a uniform set of accounting standards. Defond et al. attribute this finding to what they term improved comparability benefits resulting from the adoption of IFRS. Based on the findings of Defond et al., I expect the introduction of IFRS in Canada to lead to an increase in foreign capital flows to those Canadian firms with the greatest increase in comparable industry peers. Hence, firms that benefit more from the enhanced comparability should have better access to the capital markets than firms with less comparability benefits, and consequently less need for internal cash. This reasoning leads to the following hypothesis:

Hypothesis 2: The marginal value of cash will decrease more significantly in firms that experience a greater comparability increase with foreign peers.

One important reason that firms hold cash is to save for future investments. Because raising external cash subjects firms both to transaction costs and to delays in obtaining financing, firms with high growth options hold more cash inside the firm and make lower dividend payouts than their peers with low growth options or in low competition environments (Hoberg, Phillips, & Prabhala, 2014). Consequently, internal cash is more valuable to high growth firms with low free cash flow than to high growth firms with sufficient funds or to low growth firms. To the extent that IFRS expands firms' access to capital markets, high growth firms can reduce their reliance on internal cash holdings. The reduction should be most significant in firms with high growth

opportunities but low cash holdings available to fund future investments. Hence, an extra dollar of corporate cash should be less valuable to shareholders in these firms subsequent to the implementation of IFRS. By contrast, high growth firms with high cash holdings are not constrained in investing in new projects. Hence, the larger access to external financing after IFRS adoption should have little effect on the value of their cash holdings.

Firms with low growth opportunities also have less demand for retained cash, so a change in the access of external financing has little effect on the value of their cash. Firms with low growth options and high cash holdings are "cash cow" firms. They have sufficient cash holdings but not so many investment opportunities. These firms are more likely to return cash to shareholders. Hence, better access to capital markets after IFRS adoption is less likely to change the value of an extra dollar of cash. Although better access to external financing can benefit all firms, firms who already have large cash reserves inside the firm are unlikely to see a significant change in the value of cash even if the implementation of IFRS does reduce the cost of external financing. The above arguments lead to my third hypothesis:

> *Hypothesis 3: After IFRS adoptions, the value of cash will decrease more in firms with high growth opportunities and low cash holdings than in firms with high growth opportunities and high cash holdings or in firms with low growth opportunities.*

3. Methodology and Data

I use a difference-in-differences methodology to compare the change in the marginal value of cash for Canadian firms after the implementation of IFRS in Canada to the change in the value of cash in a matched sample of US firms over the same time

period. I test hypothesis (1) using a model that follows Faulkender & Wang (2006), modified to include variables relating to the adoption of IFRS in Canada:

$$r_{i,t} - R_t^M = \beta_0 + \beta_1 \Delta C_{i,t} + \beta_2 POST + \beta_3 \Delta C_{i,t} * POST + \beta_4 \Delta C_{i,t} * Mandatory + \beta_5 Mandatory * POST + \beta_6 \Delta C_{i,t} * Mandatory * POST + \sum_{\beta=7}^{16} Control\ variables_{i,t} + \sum_{\beta=17}^{26} Control\ variables_{i,t} * Mandatory + \varepsilon_{i,t}$$

The dependent variable is the annualized market-adjusted return of firm *i* during fiscal year *t.* Following Faulkender & Wang (2006), I assume the expected change in cash holdings is zero and the realized change in cash is unexpected. $\Delta C_{i,t}$ is the *unexpected* change in cash plus marketable securities of firm *i* from year *t-1* to *t.* *Mandatory* equals 1 if the observation is a Canadian public firm and 0 if it is a US public firm. *POST* equals 1 if the fiscal year *t* of firm *i* begins after Jan 1, 2011 and 0 otherwise.

I follow Faulkender & Wang (2006) in my choice of variables to control for other firm characteristics that affect both firm value and cash holdings.[7] All control variables are the unexpected change in firm characteristics that relate to change in market value. I include the change in earnings to control for changes in profitability. Firms' investment policies determine how much cash holdings firms retain and how much value is expected to be generated, so I include the change in net assets and the change in R&D expenditures.

To control for financing policies, I include the level of cash in year *t*-1, the change in interest expense, the market leverage ratio and net financing during fiscal year *t*. The payout policy also affects cash distributions and how shareholders value cash, so I use the change in dividends paid to account for the effect of cash distributions. All variables

[7] See Appendix 1 for detailed definitions of variables.

other than the market leverage ratio are deflated by the lagged market value of equity. I include country-year fixed effects and firm fixed effects, and cluster standard errors at the firm level (Petersen, 2009).

I obtain accounting data for Canadian firms from 2006 to 2014 from the Report on Business (ROB) Corporate Database by the Globe and Mail in Canada. The ROB database is the most comprehensive source of accounting data for Canadian companies, containing data on approximately 9,500 firms from 1973 to 2014. I collect monthly stock return and market return data from the Canadian Financial Markets Research Center (CFMRC). This database contains stock and market return data from the Toronto Stock Exchange (TSX). I obtain accounting and stock return data for US firms from CompuStat and CRSP. The market return in the Canadian sample is the CFMRC value-weighted market return and in the US sample it is the CRSP value-weighted market return.[8]

Canadian firms in the ROB database are not assigned to the SIC codes that are used in US firms. I use the industry index, segment descriptions and SIC code definitions to identify the industries of Canadian firms corresponding to the first two digits of US firms' SIC codes. Following the previous literature (Faulkender & Wang, 2006), I exclude Canadian firms in the financial industry with industry index 13.1 or whose annual reports describe the firm as a financial firm, real estate firm, or bank. I also exclude Canadian firms that have industry index 6.5 or whose annual reports describe the firm as a utility firm. I exclude US firms with SIC codes 4900-4999 and 6000-6999. I also exclude firm-year observations in 2008-2009 to avoid the concern that the

[8] Since no corresponding size and book-to-market portfolio return data are available in Canada, I demonstrate that replacing Fama-French 25 portfolio return by the market return as the benchmark return in US firms has little impact on the regression results. Hence, I use the CFMRC value-weighted market return for the Canadian sample and the CRSP value-weighted market return for the US sample as the benchmark return. See Appendix 2 for details. Using equal-weighted market returns yields qualitatively similar empirical results.

distortionary and potentially unequal effect of the financial crisis on Canadian and US firms will confound the results.[9] All sample firms have data available both before and after the implementation date of IFRS in Canada.

To conduct my difference-in-differences analysis, each year I match Canadian firms to US firms by industry and size. I define industry as the firm's two-digit SIC code.[10] I define size as the market value of equity. The match is one-to-one without replacement. Firms without available matches are dropped from the sample. I also drop firms with stock prices less than one dollar to eliminate the distortionary effect of illiquidity. Since I require annual changes for some variables, I collect data beginning in 2005 such that sample firms have three years of data available both before and after IFRS adoption in 2011. The final sample of Canadian firms consists of 2,819 firm-year observations. Each of these firms is matched to a US firm. Table 1 presents the sample selection process.

INSERT TABLE 1 ABOUT HERE

Table 2 reports the descriptive statistics for the matched sample of Canadian and US firms. On average the annualized abnormal return of both Canadian and US firms is positive but the median is negative, which suggests that the abnormal return is right-skewed. The average annual abnormal return of the Canadian firms is significantly higher than that of US firms even though the firms are not significantly different in size. To allay the concern that any change in the value of cash is caused by unidentified factors that drive the divergence between the abnormal returns of Canadian and US firms, I

[9] See Figure 1 for a graph of the abnormal returns of both the Canadian and the US samples from 2006 - 2014. Additionally, see Section III for a description of how I mitigate any concerns about how differences in the abnormal returns across the Canadian and US samples might drive the results.

[10] Recall that I manually assign Canadian firms to SIC codes based on how the firm's annual report defines its industry.

compare the average abnormal return in Canadian and US firms over the sample period. Figure 1 shows that, although the average abnormal return of Canadian firms is consistently higher than that of US firms, the abnormal returns of the two groups track closely both before and after the implementation of IFRS in Canada.

The one observable difference between the return series is that Canadian firms' recovery from the 2008 financial crisis was more marked in 2009 than that of their US peers. Recall, however, that I exclude both 2008 and 2009 from my tests, so this differential recovery does not confound my results. To control for unobserved heterogeneity in each country across time, I include country-year fixed effect in the regressions.[11] This inclusion serves to de-mean both the dependent and independent variables by county-year, mitigating the concern that any change in the value of cash is driven by unobserved factors that influence the differential abnormal returns of Canadian and US firms.

INSERT FIGURE 1 ABOUT HERE

In Table 2, the mean and median change in cash of Canadian firms is around zero, which shows that the change in cash is close to symmetric. Although the mean of the change in cash holdings in Canadian firms is higher than that in US firms, their medians are not significantly different from each other. On average, Canadian firms hold cash equivalent to 12.14% of their market value but the median is much less at 6.13%, while US firms hold more cash than Canadian firms, with mean cash holdings equivalent to 16.14% of their market value and median cash holdings equal to 9.58% of their market value. The positive mean and median of the change in the earnings of Canadian firms suggests that firms' profitability is increasing during the sample period. US firms show a

[11] See Gormley & Matsa (2014) for a discussion of the use of higher order fixed effects.

similar trend during the sample period. The profitability of firms in the two groups is not significantly different. The change in R&D expense of Canadian firms is small (0.04%) with both the mean and median close to zero. On average US firms have a higher change in R&D expense and in dividend payout than do Canadian firms, while Canadian firms have lower debt ratios but higher net financing amounts than US firms.

INSERT TABLE 2 ABOUT HERE

Although the matched samples in Table 2 are not significantly different in size, the dimension on which they are matched, they do differ significantly on a number of other variables. In order to demonstrate that my results are not attributable to differences between the Canadian firms and their US matches, I conduct robustness checks using alternative matching procedures in Section 4.3 of the paper.

Table 3 presents Pearson correlation coefficients for variables in the Canadian and US samples. Pearson correlation coefficients for the Canadian sample are below the diagonal while coefficients for the US sample are above the diagonal. Consistent with the prior literature, both the level and change in cash holdings are positively related to abnormal returns. The changes in earnings, dividends and net financing are positively related to abnormal returns while leverage is negatively related to returns. The change in earnings is positively related to cash holdings, which is consistent with better performance generating more cash flow.

INSERT TABLE 3 ABOUT HERE

4. Empirical tests

4.1 Marginal value of cash after IFRS adoption

I begin by addressing the issue of voluntary adoption, and how it could affect my results. In anticipation of IFRS adoption, some Canadian firms might have voluntarily

adopted IFRS prior to 2011. There are two reasons why the early adoption of IFRS by Canadian firms is unlikely to confound my results.

First, the prior literature demonstrates that early adopters comprise a very small portion of Canadian firms. Ta (2014) examines the effect of IFRS adoption on the earnings quality of Canadian firms, and finds that, out of a sample of 1,245 firms only 17 firms (just over 1%) adopted IFRS early. Second, Daske et al. (2008) provide evidence that voluntary adopters of IFRS have significant capital market benefits in the year of mandatory adoption despite having earlier switched to IFRS. If the capital market benefits after mandatory IFRS adoption are attributable to individual firms switching to IFRS, then we should see little change in the capital market benefits to voluntary adopters around the time of mandatory IFRS adoption. While Daske et al.'s finding that early adopters of IFRS benefit when the peer firms in their country subsequently adopt IFRS by mandate is suggestive of several explanations, one possibility is that comparability benefits accrue to all firms in a country when that country adopts IFRS officially.[12] Hence, I do not separate voluntary and mandatory adopters; instead, I include all Canadian firms in the tests to examine the broad effect brought by IFRS adoption. To the extent that the capital market benefits enjoyed by early adopters of IFRS accrued prior to 2011, this biases against my finding significant results around the time of mandatory IFRS adoption.

Columns (1) and (2) of Table 4 present the regression results from tests using Canadian and US firms separately. Recall that all independent variables other than the leverage ratio are deflated by the lagged market value of equity, and thus we can interpret

[12] Daske et al. (2008) propose this as one plausible explanation for their findings. Although they are unable to demonstrate statistical evidence to support this contention, it is worth noting that it is difficult to define a formal statistical test to establish these comparability benefits.

the results as the dollar change in market value brought by one dollar change in the independent variables. In column (1), the estimated coefficient on $\Delta C_t{*}Post$ is negative and significant at the 5% level (p-value=0.03).[13] This suggests that an extra dollar of corporate cash is worth less to shareholders of Canadian firms post IFRS. Compared to Canadian firms, US firms do not experience a significant change in the value of cash around the time of IFRS adoption in Canada. In column (2), the estimated coefficient on $\Delta C_t{*}Post$ is negative but does not attain statistical significance (p-value=0.89).

The coefficients on the control variables are consistent with Faulkender & Wang (2006). In both the Canadian and US samples, earnings are positively related to the value of cash and leverage is negatively related to the value of cash. In the Canadian sample, conditional on opening cash holdings, as cash holdings increase, the marginal value of cash decreases, as is evident from the negative and significant coefficient on $\Delta C_t{*}C_{t-1}$. Additionally, the coefficient on $\Delta C_t{*}LEV_t$ is negative and significant, which suggests that the marginal value of cash to shareholders is lower in highly leveraged firms. In the US sample, some variables that are significant in Faulkender and Wang's results are insignificant in column (2) of Table 4, although they have the right signs.[14] In unreported tests, I estimate the regressions using all US firms instead of only the matched sample, and confirm that the coefficients of all variables are consistent with Faulkender and Wang's results in terms of the signs and significance.

INSERT TABLE 4 ABOUT HERE

Column (3) reports results for the matched sample. By including country-year fixed effects in the regression, I control for unobserved heterogeneity in different years in

[13] The main results are unaltered by including $\Delta C_t{*}LEV_t * Post$ in the regressions.
[14] These variables include $\Delta R\&D_t$, ΔINT_t, NF_t, $\Delta C_t{*}C_{t-1}$ and $\Delta C_t{*}LEV_t$.

Canada and the US by de-meaning both the dependent variables and independent variables by their mean value in their own country for each year. Hence, the change in the value of cash comes from the within-group variation across time. My main interest is the coefficient on ΔC_t * *Mandatory*Post.* This coefficient indicates the post-IFRS change in the value of cash for Canadian firms relative to the matched sample of US firms. This coefficient is negative and significant at the 5% level (p-value=0.04), indicating that the marginal value of cash in Canadian firms decreased more in the post-IFRS period than did the value of cash in US firms.

Since Canadian and US firms operate in a similar economic environment, the inclusion of US firms in the tests serves as a control for unobservable concurrent economic factors, thus providing strong support for the contention that the observed decrease in the value of Canadian cash post IFRS is in fact related to the implementation of IFRS. Therefore, I conclude that an extra dollar of corporate cash in Canadian firms is worth less to shareholders as a result of IFRS adoption.[15]

DeFond et al. (2011) demonstrate that, following the 2005 mandatory adoption of IFRS in the European Union (EU), foreign mutual fund ownership increased in firms for whom IFRS resulted in improved comparability. To test hypothesis 2, I adopt DeFond et al.'s definition of comparability, and examine whether the marginal value of Canadian corporate cash decreased more following the adoption of IFRS for those firms for whom IFRS adoption resulted in the greatest increase in comparability.

Following DeFond et al. (2011) I calculate the industry-level change in uniformity to capture the change in comparability after IFRS adoption. Specifically, I count the sum

[15] I also conduct placebo tests by using years 2006, 2007 and 2009 as if they were each the adoption year. I find no significant change in the value of cash in Canadian firms after the placebo adoption year using either the Canadian sample or a matched sample including US matched firms.

of all domestic firms in a particular industry and their foreign industry peers in countries that have adopted IFRS, and then divide this number by the total amount of domestic firms in a particular industry. I calculate this ratio in 2011, the year of IFRS adoption in Canada, by two-digit SIC codes. Foreign peers are selected from Europe and Australia. As DeFond et al. (2011) argue, a high ratio provides evidence of an increase in the number of a company's comparable peers because IFRS provides a uniform set of accounting standards across all IFRS-adopting companies. To the extent that foreign investors have expert knowledge in a particular industry, they can now use this knowledge to increase their portfolio of investments by investing in Canadian companies in that industry. I then examine the change in the marginal value of cash in Canadian firms with the highest versus the lowest changes in uniformity. I expect that firms with the highest increase in uniformity benefit most in the capital markets after IFRS adoption, leading to a significant decrease in the marginal value of cash. The results are reported in Table 5.

INSERT TABLE 5 ABOUT HERE

Column (1) of Table 5 reports results for Canadian firms that experience the lowest quartile change in uniformity following IFRS adoption. These firms experience no significant change in the marginal value of cash, as evidenced by the negative but insignificant coefficient on $\Delta C_t{*}Post$. Column (2) of Table 5 reports results for Canadian firms that experience the highest quartile change in uniformity following IFRS adoption. In column (2), the coefficient on $\Delta C_t{*}Post$ is negative and significant at the 5% level (p-value=0.003). Firms that have highest increase in uniformity experience a significant

decrease in the marginal value of cash.[16] In (untabulated) robustness check, I also examine the change in the marginal value of cash in Canadian firms that experience the largest increase in uniformity from countries that have strong legal enforcement and find similar results. Overall, the above results are consistent with the argument that the decrease in the marginal value of cash is due to capital market benefits resulting from enhanced comparability after IFRS adoption.

I next examine how the marginal value of cash in Canadian firms changes post-IFRS across firms with differing external financial needs and growth prospects. Hypothesis 3 proposes that the marginal value of cash will decrease the most for high growth firms with limited internal cash because these are the firms that will benefit the most from increased access to capital markets. Following Faulkender & Wang (2006), I divide firms into four groups based on their Market-to-Book ratio and interest coverage. Consistent with Faulkender & Wang, I define interest coverage as the sum of cash holdings at the beginning of the fiscal year and firms' earnings during the fiscal year divided by annual interest expense. This definition of interest coverage differs from the traditional interest coverage ratio in that it includes opening cash holdings in the numerator, which makes it particularly appropriate when interest coverage is used as a partitioning variable to explain the value of cash because it speaks to how much cash is available for managers to make investments. Each year, I classify a firm as a high (low) interest coverage firm if its interest coverage ratio is higher (lower) than the median interest coverage ratio. Firms with low (high) interest coverage and a high Market-to-

[16] The results continue to hold in a difference-in-differences regression specification that includes the originally-matched US control firms.

Book ratio are likely to have high (low) reliance on internal cash holdings and high investment opportunities. Table 6 presents the results.

INSERT TABLE 6 ABOUT HERE

I report regression results from firms with a high Market-to-Book ratio and low (high) interest coverage in columns (1) and (2). Columns (3) and (4) present regression results for firms with a low Market-to-Book ratio and either high or low interest coverage. In general, the results reported in Table 6 support my conjecture. In the four groups of firms described in Table 6, the coefficient of $\Delta C_t * Post$ is significantly negative only in firms with high Market-to-Book ratios and low interest coverage.[17] This finding is consistent with the contention that firms with high growth opportunities but low cash holdings derive the most benefit from the greater access to external financing available after IFRS adoption.

In untabulated tests, I divide firms into groups using leverage, firm size or payout ratio as alternative proxies for financial constraints following Faulkender & Wang (2006). I find that the marginal value of cash decreases significantly in firms with high leverage, small size or low payout ratios. The results provide additional support for the argument that financially constrained firms benefit the most from IFRS adoption.

4.2 Additional tests: cash holdings after IFRS adoption

My research question concerns the marginal value of cash pre and post the implementation of IFRS in Canada. However, the change in the extent of firms' cash holdings pre and post IFRS is a related issue because, as I acknowledge in Section 2,

[17] The results continue to hold in a difference-in-differences regression specification that includes the originally-matched US control firms.

Canadian firms may have decreased their cash holdings if they anticipated an increase in the availability of financing post IFRS. As the average cash holdings decrease, *ceteris paribus*, the marginal value of cash will increase, which biases against my finding that the value of cash *decreases* in the post-IFRS period. If the decrease in cash holdings is sufficient, the ensuing increase in the value of cash due to lower cash holdings may offset the decrease in the value of cash due to greater access to external financing, resulting in no change in the value of cash after IFRS adoption. It is, however, worth noting that the adjustment of cash holdings is usually imperfect and sticky. Firms may anticipate that their optimal cash holdings should be lower after IFRS adoption and proactively decrease cash holdings before IFRS adoption. Nevertheless, Dittmar & Duchin (2010) demonstrate that firms are unlikely to instantaneously reduce cash to the optimal level due to the adjustment costs.

Another potential concern with the matched Canadian /US sample is that differences in cash holdings across the two groups might contribute to a differential change in the value of cash after IFRS adoption. To address the concerns, although I do not present formal hypotheses about cash holdings, I first compare cash holdings in Canadian and US firms before and after IFRS adoption and then examine the change in cash holdings pre and post IFRS using Opler, Pinkowitz, Stulz, and Williamson's (1999) model of the determinants of cash holdings.

In Canadian firms, the average cash holdings scaled by net assets decrease from 0.1756 in the pre-IFRS period to 0.1491 in the post-IFRS period. This decrease is significant at the 10% level (*t*-stat=-1.78). The average cash holdings do not change significantly in US firms before and after IFRS adoption. The difference in the difference

in average cash holdings of Canadian and US firms pre and post IFRS is -0.051, which is not significant (*t*-stat=-0.64). Hence, the difference in average cash holdings between the two groups is unlikely the reason that the marginal value of cash decreases significantly in Canadian firms after IFRS adoption.

Next, I examine cash holdings in Canadian and US firms using the model below following Opler et al. (1999):

$$Cash_{i,t} = \beta_0 + \gamma_1 Post + \gamma_2 Mandatory + \gamma_3 Post * Mandatory + \sum_{\beta=1}^{9} Control\ variables_{i,t} + \sum_{\beta=10}^{18} Control\ variables_{i,t} * Post + \sum_{\beta=19}^{27} Control\ variables_{i,t} * Post * Mandatory + \varepsilon_{i,t}$$

The dependent variable is annual cash holdings scaled by net assets. The main coefficient of interest is γ_3. A positive and significant γ_3 would suggest that on average cash holdings increase after IFRS adoption in Canada, which could lead to a decrease in the value of cash. Following Opler et al. (1999), I also include other firm-specific characteristics that affect firms' cash holding policy.[18] The control variables include the Market-to-Book ratio, capital expenditures and R&D expenses, as firms hold cash to fund future investments. I also include cash flow, working capital and cash flow volatility to account for the sources of cash reserves. Firms' financing and payout decisions also affect the amount of cash held within firms, so I include leverage and dividends paid as control variables.

INSERT TABLE 7 ABOUT HERE

[18] See Appendix 1 for detailed definition of variables.

Column (1) of Table 7 reports the regression results using Canadian firms only and column (2) reports results that include the matched control sample of US firms. In column (1), the coefficient on *Post* is negative, though insignificant after I control for other firm-specific characteristics that affect firms' liquidity policy. In column (2), the coefficient of *Post*Mandatory* is negative and significant at a *p*-value < 0.10. This finding indicates that the cash levels of Canadian firms decreased relative to those of US firms following the adoption of IFRS in Canada, which biases against finding a decrease in the marginal value of Canadian corporate cash. Hence, I conclude that although Canadian firms decreased cash holdings following the adoption of IFRS, they did not reduce them to the point where the marginal value of cash remained unchanged – the marginal value of cash still decreased due to the expanded access to external financing.

4.3 Additional tests: Controlling for agency

It has been well documented in the previous literature that the marginal value of cash is related to agency problems (see e.g. Dittmar & Mahrt-Smith, 2007; Frésard Laurent & Salva, 2010; Gao & Jia, 2016). Cash holdings in poorly governed firms have less value to investors than cash holdings in well-governed firms because investors are concerned about the misappropriation of cash when the quality of governance is poor (Dittmar & Mahrt-Smith, 2007). As IFRS requires more disclosure and expands firms' access to capital markets, the increased monitoring from investors, analysts and other market participants may alleviate agency problems. If this is the case, the marginal value of cash holdings should increase in firms with poor internal monitoring after the implementation of IFRS. On the other hand, IFRS, as a principle-oriented standard, gives managers more discretion when making accounting choices (Ball, 2006), which could

increase agency costs even more in poorly governed firms. Consequently, the marginal value of cash could also decrease in poorly governed firms post-IFRS. Therefore, heterogeneity in corporate governance has the potential to influence how the marginal value of cash changes post IFRS.

To investigate the impact of agency problems on the change in the marginal value of cash post IFRS, I use dual-class shares in Canadian firms as a proxy for agency problems. Dual-class shares are a particularly apt proxy for agency costs in the Canadian context due to the prevalence of dual-class share structures in Canada. Around 10% of firms traded on the TSX now have dual-class shares.[19] Additionally, some widely used proxies of agency problems in the previous literature, such as the G-index (Gompers, Ishii, & Metrick, 2003) or the E-index (Bebchuk, Cohen, & Ferrell, 2009) are not available for Canadian firms, necessitating the use of an alternative proxy for agency concerns.

The dual-class share structure can create agency problems since controlling shareholders, with superior voting rights, can extract private benefits at the expense of minority shareholders by making value-decreasing investments or by expropriating cash reserves (Masulis, Wang, & Xie, 2009). In recent years, usage of the dual-class share structure has drawn a lot of concern from investors groups who view the structure as a mechanism that enables nepotism, and allows a small group of investors to ignore the voice of the majority of shareholders.[20]

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[19] "Bombardier is the poster child of the curse of Canada's dual-class share structure", *The Global and Mail*, May 13, 2017.

[20] For example, the Canadian Coalition for Good Governance, a powerful coalition of institutional investors, published their dual-class share policy and principles in September 2013. CCGG's board of directors and a large majority of CCGG's members believe that the best practice for companies undertaking initial public offerings is to utilize a single class of voting common shares. To the extent that companies choose to use a dual class share structure, the CCGG provides a set of guidelines and calls on companies to follow the principles they set out in these guidelines.

Consistent with the contention that dual class shares can cause agency problems that are alleviated by the transparent reporting resulting from IFRS adoption, Hong (2013) shows that the marginal value of cash increased in a sample of firms with dual-class share structures across thirteen countries that mandatorily adopted IFRS in the 2002-2007 period. However, as Hong herself accedes, she is unable to parse out the effects of IFRS adoption from those of concurrent improvements to legal enforcement around the time of the adoption. My tests, as well as my use of a matched US control sample, are unlikely to provide results driven by confounding concurrent events.

To identify the dual-class share firms in my sample, I collect voting right data from Capital IQ and Bloomberg. I also hand collect ownership structure information from the System for Electronic Document Analysis and Retrieval (SEDAR) website for firms that are not included in Capital IQ or Bloomberg terminal. Approximately 15% of the firms in my sample have dual-class shares. I present tests that include a control for agency in Table 8.

INSERT TABLE 8 ABOUT HERE

Columns (1) and (2) report the results of the main regression from Section 3 using Canadian firms with or without dual-class shares. The coefficient on $\Delta C_t * Post$ is insignificant in dual-class share firms. This finding suggests that in firms with potentially serious agency problems resulting from a dual-class share structure, IFRS adoption does not significantly change the value of one extra dollar to investors. In firms without dual-class shares, the marginal value of cash decreases after IFRS adoption, but just misses significance at conventional levels (p-value = 0.101). Column (3) reports the results using both dual-class and non-dual class shares. In this column, the coefficient of $\Delta C*Post$ is

negative and significant (p-value< 0.10). The coefficient on the three-way interaction $\Delta C_t * Dual * Post$ is positive but insignificant, which suggests that there is no significant post-IFRS difference in the marginal value of cash between firms with and without dual-class shares. Interestingly, however, the coefficient on $\Delta C_t * Dual$ is negative and significant (p-value < 0.05). The value of cash is significantly lower for firms with dual-class shares. This relation is not altered with the implementation of IFRS. These results suggest first, that dual class shares identify the presence of agency issues that cause shareholders to decrease their assessment of the marginal value of cash and second, that, in the Canadian context, these agency concerns are severe enough that they are not affected by the accounting standards under which the financial statements are prepared.[21]

Note that in Table 8 I substitute industry fixed effects for the firm fixed effects used in the previous tables, based on the following rationale: In firms with the potential for agency issues, the relation between all of the independent variables and excess returns, the dependent variable, will be affected by the presence of agency problems. If firm fixed effects are included in the column (3) regression, these will pick up the differential relation between the dependent variable and the explanatory variables for firms with agency issues versus those without agency issues, thus subsuming the explanatory power of the dual-class share variable. I repeat but do not tabulate the column (1) and (2) regressions using firm fixed effect with very similar results. In these specifications, the only difference is that the coefficient on $\Delta C_t * Post$ now attains significance at the 5% level in column (2).

[21] These results are not consistent with those of Hong (2013), who finds that the marginal value of cash increased after the 2005 implementation of IFRS. There are, however, two main differences between my setting and Hong's. First, the 2005 adoption of IFRS was concurrent with improvements in enforcement in many countries. Second, the switch to IFRS in Canada involved a switch from one high-quality accounting regime to another, where the main benefits accruing to Canadian companies are comparability benefits. For some countries in Hong's setting, IFRS provided investors with a more transparent set of accounting standards than own-country GAAP.

4.4 Robustness checks

4.4.1 Cross-listed firms

Some Canadian firms are cross-listed in the US market and have the choice to continue reporting under US GAAP after mandatory IFRS adoption in Canada. The cross listing should provide these firms with sufficient broad access to international capital markets such that the change in accounting standards in Canada has little impact on them. As a result, we should observe that the marginal value of cash decreases more significantly in firms listed only on the TSX than in firms that are cross-listed in the US. I split Canadian firms into two groups by whether or not they are cross-listed in the US, and then estimate the main regression specified in Section 3 in Canadian firms only and in the matched sample. The (unreported) results are consistent with expectations. The marginal value of cash decreases significantly in firms listed only on the TSX. These results continue to hold when I include US matched firms. By contrast, the coefficient on $\Delta C_t * Post$ is negative but insignificant in firms cross-listed in the US and remains so when I include US matched firms.

4.4.2 Three-dimension matching

In the main tests, I match Canadian and US firms by industry and size. Some firm-specific characteristics are still different from each other after the matching. To verify that the above results are not due to these differences, I refine the matching by adding one more dimension, including cash holdings, leverage or net financing. Specifically, each year by industry I choose US firms of which the size is within the range of 75% to 125% of the size of Canadian firms. Within these matches, I choose US firms that have the closest cash holdings, leverage, or net financing to those in Canadian firms. The match is one-to-one without replacement, so that each Canadian firm is

matched to a unique US firm. After the three-dimension matching, firm-specific characteristics, such as cash holdings, size, change in earnings, R&D, interest expenses and dividends are not significantly different from each other. I then estimate the main regression specified in Section 3 in these matched observations. The main results continue to hold, as the marginal value of cash still decrease significantly after IFRS adoption in Canada.

4.4.3 Foreign investments after IFRS adoption

Previous accounting literature on IFRS adoption provides evidence that IFRS adopters enjoy benefits from increased access to both equity and debt markets. While these benefits are a maintained assumption in my paper rather than my focus, I provide some broad evidence about the extent of foreign investment in Canada pre and post the implementation of IFRS. I obtain foreign direct investment (FDI) data, as well as the value of foreign investments in Canadian corporate bonds and equities from Statistics Canada.[22] Since audited financial statements prepared under IFRS investors are only available after the 2011 fiscal year-end, I compare FDI and foreign investments in equities and bonds around IFRS adoption in my sample period excluding 2011. I do not provide formal statistical tests since I do not have sufficient data to do so.[23]

After IFRS adoption, FDI in Canada increased by 5% in 2012 and 9.2% in 2013, as compared to only 3.2% in 2010. Foreign investments in equities do not show the same trend, with increases of 5.7% in 2012 and 2013, as opposed to a 24.5% increase in 2010.[24] The high percentage increases in equity investments in the years immediately

[22] http://www.statcan.gc.ca/

[23] Statistics Canada data provide aggregate data over Canadian firms, and are not specific to my sample firms.

[24] Burnett, Gordon, & Jorgensen (2017) find that market liquidity decreased in Canadian firms that are not cross-listed in the US after IFRS adoption. Their findings are consistent with the observation of no increase in demand for equities of Canadian firms following IFRS adoption. However, as I explain later, foreign investors have multiple ways to

following the 2008 financial crisis are likely due to the rebound in equities after the crisis. Notably, according to the Statistics Canada data I reference, annual FDI in Canada is over three times larger than annual foreign equity investments in Canadian firms.

The Statistics Canada data also illustrate that foreign investors invested more heavily in the public debt of Canadian firms after IFRS adoption. The yearly increase of foreign investments in Canadian corporate bonds is 7.5%, 14.6% and 15.7% in 2012, 2013 and 2014, which is much higher than the percentage changes of 7.9%, -0.5% and 8.6% in 2006, 2007 and 2010. Foreign investment in Canadian bonds is more than twice as large as foreign investment in Canadian equities over my sample period.

While I can provide no statistical tests using the above data, I believe that the percentage changes in foreign investment in Canadian firms following IFRS are broadly consistent with the claim that Canadian firms' access to foreign capital increased after the implementation of IFRS in Canada. Foreign investment in Canadian equities does not support this conjecture, but trends in equity investments are confounded by the distortionary effect of the financial crisis. Moreover, the sum of FDI and foreign investments in Canadian bonds is approximately 5.5 times the amount of foreign investments in Canadian equities annually, and both FDI and foreign bond investments show larger percentage increases following the implementation of IFRS. This expanded access to capital provides a rationale for the decrease in the marginal value of Canadian firms' internal cash following the implementation of IFRS.

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provide financing to Canadian firms after IFRS adoption, including investing in corporate bonds or via direct investments.

4.4.4 Changes to variable measurement after IFRS adoption

After IFRS adoption, the measurement of some of the variables used in my analysis may change as accounting standards change. However, the definition of my key variable, cash and cash equivalents, is very similar in IAS 7 and in the preceding Canadian GAAP.[25] Hence, it is not likely that my observed reduction in the value of cash following IFRS adoption in Canada is confounded by a change in the way accounting standards measure cash. Nevertheless, to be cautious, I use an indicator variable in the main regressions to distinguish cash before and after IFRS adoption in Canada. Specifically, I add C_{t-1}*$Post$ and C_{t-1}*$Post$*$Canada$ in the Table 4 regressions. The results remain qualitatively the same. In addition, I randomly picked 10% of sample firms (50 firms) and manually compared their reported cash holdings in the annual report for the last year before adoption of IFRS to the restated value of cash reported for that same year in the first annual report prepared following the implementation of IFRS. Of these 50 firms, only two firms reported different cash holdings when they restated the financial statements using IFRS, and only one of the two indicated that the restatement was the result of IFRS. This restatement was a trivial portion of the reported value of cash.

Other variables in the regressions may also be subject to measurement changes due to changes in accounting standards. For example, under certain circumstances, asset write-ups are permitted under IFRS, but no such write-up is allowed under Canadian GAAP. To verify that the reduction in the value of cash is not caused by the measurement changes in accounting variables that are most likely affected by the switch to IFRS, I interact the changes in both earnings and net assets with *Mandatory* and *Post* and re-

[25] See the definition of cash and cash equivalents in The Canadian Institute of Chartered Accountants (CICA) Handbook Section 1540.

estimate the Table 4 regressions for Canadian firms alone and for Canadian firms and their the matched US sample firms. The (unreported) results show that the coefficient on ΔC_t*$Post$ remains negative and significant in the Canadian sample, and the coefficient on ΔC_t*$Mandatory$*$Post$ continues to be significantly negative when I include the matched sample.

5. Conclusion

This study hypothesizes and tests the change in the marginal value of Canadian corporate cash holdings around IFRS adoption. To disentangle IFRS adoption effects from concurrent economic and legal environment changes, I include US firms as the control group and use a difference-in-differences research design. I find that the marginal value of cash decreases in Canadian firms after IFRS adoption, which is consistent with previous research that finds an expanded access to external financing for firms that adopt IFRS mandatorily. The result is robust to comparison of my sample of Canadian firms to a matched control sample of US firms. The post-IFRS decrease in the marginal value of cash is most evident for firms that have a larger number of similar firms in non-Canadian IFRS regimes. I also find that the decrease is more significant in firms with high leverage ratios and in firms with high growth opportunities but low interest coverage.

Overall, my findings show that IFRS adoption changes the value shareholders place on liquid assets. My rationale for this finding is that the complementarity benefits provided by IFRS likely increased Canadian firms' access to external financing, reducing the need for internal cash. Prior research on the effects of IFRS has called for better design to disentangle IFRS adoption effects from simultaneous changes in economic and

governance environments. I believe that my difference-in-differences design and tests provide clean results of the effect of IFRS adoption on the value of corporate cash. My results also contribute to the ongoing debate on the benefits and costs of IFRS adoption by providing evidence on the overall impact of IFRS adoption on the capital markets. My results provide corroborating evidence to studies on European data documenting the capital market benefits associated with IFRS adoption. In addition, the findings add to the literature of value of cash by demonstrating that accounting standards are an additional factor that influences the value of corporate cash.

Of course, there are limitations to my study and readers should interpret my findings with caution. First, the Canadian sample is relatively small because banks and the financial sector account for a large proportion of the TSX, and these firms are excluded in my study. Second, though the US and Canada have similar economic and legal enforcement environment, corporate laws and corporate governance are not identical across the two countries, and the US economy is much larger than that of Canada. However, I believe that these differences are minimal compared to those differences across EU countries and across other countries that have also adopted IFRS. Additionally, my results continue to hold when I replace the US control sample with an Australian control sample.

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Appendix 1 Variable definitions

Variables	Definitions
$r_{i,t}$	Annualized return of firm *i* during fiscal year *t.*
R_t^M	Annualized market return during fiscal year t. For Canadian firms, it's Canadian Financial Markets Research Center value-weighted market return and the CRSP value-weighted market return for US firms.
$\Delta C_{i,t}$	Change in cash plus marketable securities of firm *i* from year *t-1* to *t*
Mandatory	Equals 1 if it is a Canadian firm and 0 if it is a US firm
Post	Equals 1 if the fiscal year *t* of firm *i* begins after Jan 1, 2011 and 0 otherwise.
$\Delta E_{i,t}$	Change in earnings before extraordinary items plus interests, deferred tax credits and investment tax credits of firm *i* from year *t-1* to *t*
$\Delta NA_{i,t}$	Change in total assets net of cash of firm *i* from year *t-1* to *t*
$\Delta R\&D_{i,t}$	Change in R&D expenditures of firm *i* from year *t-1* to *t*
$C_{i,t-1}$	Cash plus marketable securities of firm *i* at fiscal year *t-1*.
$\Delta INT_{i,t}$	Change in interest expenses of firm *i* from year *t-1* to *t*
$LEV_{i,t}$	Sum of long-term and short-term debt divided by the sum of total debt and the market value of equity of firm *i* at fiscal year *t.* The market value of equity is defined as the stock price at the fiscal year-end multiplied by the common shares outstanding .
$NF_{i,t}$	Total equity issuances minus share repurchases plus debt issuances minus debt redemptions of firm *i* at fiscal year *t.*
$\Delta DIV_{i,t}$	Change in dividends paid of firm *i* from year *t-1* to *t*
$M/B_{i,t}$	Book value of total assets minus book value of equity plus market value of equity, scaled by net assets of firm *i* at fiscal year *t*
$Size_{i,t}$	The logarithm of net assets of firm *i* at fiscal year *t*
$Cash\ flow_{i,t}$	Earnings after interest, dividends and taxes but before depreciation, divided by net assets of firm *i* at fiscal year *t*
$Working\ capital_{i,t}$	Current assets minus current liabilities minus cash of firm *i* at fiscal year *t*
$Capital\ expenditure_{i,t}$	Capital expenditures divided by net assets of firm *i* at fiscal year *t*
$Leverage_{i,t}$	Long-term debt plus short-term debt, scaled by net assets of firm *i* at fiscal year *t*
$Cash\ Flow\ sigma_{i,t}$	Standard deviation of firm *i*'s cash flow in last 5 years
$R\&D_{i,t}$	R&D scaled by sales of firm *i* at fiscal year *t*
$Dividend_{i,t}$	Equals to 1 if a firm pays dividends at year *t*, 0 otherwise

Appendix 2

The original model used in Faulkender & Wang (2006) is as follows:

$$r_{i,t} - R_{i,t}^{M} = \beta_0 + \beta_1 \Delta C_{i,t} + \beta_2 \Delta E_{i,t} + \beta_3 \Delta NA_{i,t} + \beta_4 \Delta RD_{i,t} + \beta_5 \Delta I_{i,t} + \beta_6 \Delta D_{i,t} + \beta_7 C_{i,t-1} + \beta_8 L_{i,t} + \beta_9 NF_{i,t} + \beta_{10} C_{i,t-1} * \Delta C_{i,t} + \beta_{11} L_{i,t} * \Delta C_{i,t} + \varepsilon_{i,t}$$

Where $R_{i,t}^{M}$ is Fama-French 25 size and book-to-market portfolio return. To test whether using alternative benchmark returns fundamentally affects the regression results, I estimate the regression each year using the Fama-French 25 size and book-to-market portfolio return, the CRSP value-weighted market return, the Fama-French market return and the S&P 500 return as the benchmark return, and obtain four sets of time-series coefficients for each independent variables, as reported in Table A1. I then regress the coefficients from the regression using the Fama-French 25 size and book-to-market portfolio return on the coefficients from the regressions using alternative benchmark returns. The intercept is not significantly different from 0, and the coefficient is not significantly different from 1.

Table A1 Coefficients of independent variables by year using different benchmark returns

Variables	Benchmark return			
	FF 25 portfolio return	CRSP Value-weighted market return	FF market return	S&P 500 return
2006				
ΔC_t	1.579***	1.610***	1.609***	1.610***
ΔE_t	0.678***	0.668***	0.669***	0.668***
ΔNA_t	0.319***	0.321***	0.321***	0.321***
$\Delta R\&D_t$	-0.380	-0.477	-0.477	-0.477
ΔINT_t	0.158	0.336	0.337	0.336
ΔDIV_t	0.330	0.320	0.319	0.320
LEV_t	-0.399***	-0.284***	-0.283***	-0.284***
C_{t-1}	0.142**	0.210***	0.209***	0.210***
NF_t	-0.327***	-0.352***	-0.352***	-0.352***
$\Delta C_t * C_{t-1}$	-0.781**	-0.832***	-0.832***	-0.832***
$\Delta C_t * LEV_t$	-0.278	-0.137	-0.138	-0.137
2007				
ΔC_t	1.636***	1.651***	1.649***	1.651***
ΔE_t	0.743***	0.741***	0.741***	0.741***
ΔNA_t	0.321***	0.346***	0.345***	0.346***
$\Delta R\&D_t$	1.154**	1.171**	1.169**	1.170**
ΔINT_t	1.021	1.101	1.100	1.100
ΔDIV_t	1.371**	1.405**	1.399**	1.405**
LEV_t	-0.418***	-0.480***	-0.481***	-0.480***

Table A1, Continued

Variables	FF 25 portfolio return	CRSP Value-weighted market return	FF market return	S&P 500 return
C_{t-1}	0.124*	0.0145	0.0146	0.0146
NF_t	-0.174*	-0.214**	-0.214**	-0.214**
$\Delta C_t * C_{t-1}$	-1.121***	-1.055***	-1.057***	-1.055***
$\Delta C_t * LEV_t$	-2.456***	-2.515***	-2.513***	-2.516***
2010				
ΔC_t	1.361***	1.382***	1.384***	1.381***
ΔE_t	0.281***	0.306***	0.307***	0.306***
ΔNA_t	0.210***	0.217***	0.217***	0.217***
$\Delta R\&D_t$	0.813***	0.879***	0.879***	0.880***
ΔINT_t	0.114	0.101	0.103	0.101
ΔDIV_t	0.632	0.640	0.643	0.641
LEV_t	-0.276***	-0.294***	-0.296***	-0.294***
C_{t-1}	0.245**	0.270**	0.271**	0.270**
NF_t	-0.288***	-0.286***	-0.288***	-0.286***
$\Delta C_t * C_{t-1}$	-0.0302	-0.0343	-0.0337	-0.0345
$\Delta C_t * LEV_t$	-1.186***	-1.208***	-1.213***	-1.207***
2011				
ΔC_t	0.591***	0.558***	0.557***	0.558***
ΔE_t	0.282***	0.274***	0.274***	0.274***
ΔNA_t	0.00576	0.00852	0.00837	0.00854
$\Delta R\&D_t$	0.580	0.482	0.482	0.481
ΔINT_t	0.299	0.390	0.384	0.393
ΔDIV_t	0.593	0.654	0.652	0.654
LEV_t	-0.297***	-0.284***	-0.281***	-0.286***
C_{t-1}	-0.0627	-0.103**	-0.106***	-0.103**
NF_t	0.142**	0.0805	0.0814	0.0801
$\Delta C_t * C_{t-1}$	-0.0160	0.0533	0.0515	0.0536
$\Delta C_t * LEV_t$	-1.028***	-1.092***	-1.086***	-1.093***
2012				
ΔC_t	1.094***	1.126***	1.124***	1.126***
ΔE_t	0.355***	0.354***	0.355***	0.354***
ΔNA_t	0.116	0.117	0.117	0.117
$\Delta R\&D_t$	1.837***	1.760***	1.765***	1.759***
ΔINT_t	-1.404*	-1.318*	-1.321*	-1.316*
ΔDIV_t	0.778***	0.819***	0.811***	0.819***
LEV_t	-0.140***	-0.0863*	-0.0890*	-0.0860*
C_{t-1}	0.153***	0.186***	0.186***	0.186***
NF_t	-0.0673	-0.0855	-0.0860	-0.0856
$\Delta C_t * C_{t-1}$	-0.134*	-0.163**	-0.162**	-0.163**
$\Delta C_t * LEV_t$	-0.744**	-0.699**	-0.702**	-0.699**
2013				
ΔC_t	0.627***	0.606***	0.606***	0.606***
ΔE_t	0.234**	0.239***	0.238***	0.239***
ΔNA_t	0.195***	0.188***	0.188***	0.188***
$\Delta R\&D_t$	-0.332	-0.345	-0.345	-0.344

Table A1, Continued

Variables	FF 25 portfolio return	CRSP Value-weighted market return	FF market return	S&P 500 return
ΔINT_t	-4.509***	-4.451***	-4.458***	-4.448***
ΔDIV_t	-0.0638	-0.105	-0.110	-0.106
LEV_t	-0.329***	-0.355***	-0.357***	-0.354***
C_{t-1}	0.0177	0.0500	0.0499	0.0501
NF_t	0.0891	0.109	0.109	0.109
$\Delta C_t * C_{t-1}$	-0.292***	-0.282***	-0.282***	-0.281***
$\Delta C_t * LEV_t$	0.320	0.346	0.347	0.346
2014				
ΔC_t	1.129***	1.133***	1.132***	1.133***
ΔE_t	0.0769**	0.0762**	0.0766**	0.0762**
ΔNA_t	0.295***	0.319***	0.318***	0.319***
$\Delta R\&D_t$	-0.424	-0.450	-0.448	-0.450
ΔINT_t	-2.127***	-1.943***	-1.935***	-1.946***
ΔDIV_t	0.639***	0.665***	0.666***	0.665***
LEV_t	-0.390***	-0.408***	-0.403***	-0.408***
C_{t-1}	0.105*	0.0657	0.0626	0.0662
NF_t	-0.214*	-0.255**	-0.254**	-0.255**
$\Delta C_t * C_{t-1}$	-0.320***	-0.304***	-0.303***	-0.304***
$\Delta C_t * LEV_t$	-0.167	-0.171	-0.178	-0.171

*** p<0.01, ** p<0.05, * p<0.1

Figure 1 Average abnormal return in Canadian and US firms over the sample period

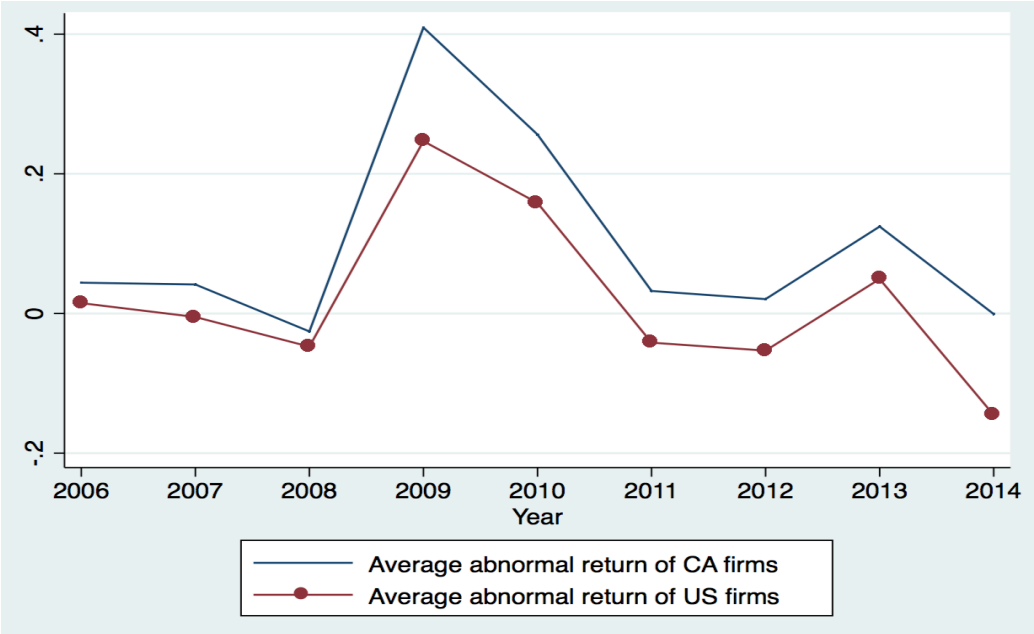

Table 1 Sample selection

Sample Selection	Canadian firm-year observations
Firm-years with fiscal data from ROB	7,947
(missing stock return data)	(2,532)
(Financial reports exist only before or after IFRS adoption at year 2011)	(433)
	4,982
(observations in 2008-2009)	(1,122)
(missing industry information)	(254)
(stock price is less than $1)	(754)
	2,870
(firm-year observations for whom a good match is unavailable)	51
Matched sample	2,819

Table 2 Comparisons of summary characteristics of sample firms

Data are from 2006 to 2014 excluding 2008-2009 for all Canadian and US public firms. $Abret_t$ is the annualized return of firm *i* at year *t* adjusted by the market return at year *t*. ΔC_t is the change of cash plus marketable securities from year *t-1* to year *t*. C_{t-1} is the cash holdings at year *t-1*. ΔE_t is calculated as the change of earnings before extraordinary items plus interest, deferred tax credits and investment tax credits from year *t-1* to year *t*. ΔNA_t is the change in total assets net of cash from year *t-1* to year *t*. $\Delta R\&D_t$ is the change in R&D expense from year *t-1* to year *t* and ΔINT_t is the change of interest expense from year *t-1* to year *t*. ΔDIV_t is defined as the change in dividends paid from year *t-1* to year *t*. LEV_t is calculated by total debt divided by the sum of total debt and market value of equity at year *t*. NF_t is net financing, defined as the total equity issuance minus share repurchases plus debt issuances minus debt redemption at year *t*. *Size* is the market value of equity. All variables are winsorized at 1% and 99%.

Variables	CA sample mean	US sample mean	Differences	CA sample median	US sample median	Differences
	(1)	(2)	(2)-(1)	(1)	(2)	(2)-(1)
$Abret_t$	0.0785	0.0010	-0.0776***	-0.0033	-0.0584	-0.0551***
ΔC_t	0.0199	0.0073	-0.0126***	0.0000	0.0010	0.001
C_{t-1}	0.1214	0.1614	0.0399***	0.0613	0.0958	0.0345***
ΔE_t	0.0159	0.0166	0.0007	0.0062	0.0081	0.0019*
ΔNA_t	0.1646	0.1027	-0.0619***	0.0614	0.0474	-0.014**
$\Delta R\&D_t$	0.0004	0.0013	0.0009**	0	0	0***
ΔINT_t	0.0024	0.0020	-0.0004	0	0	0*
ΔDIV_t	0.0028	0.0019	-0.0009**	0	0	0***
LEV_t	0.1851	0.1969	0.0117**	0.1300	0.1366	0.0066**
NF_t	0.0896	0.0532	-0.0363***	0.0177	0.0016	-0.0161***
Size	2819.0070	2930.6580	111.65	542.6124	585.0785	42.4661

*** p<0.01, ** p<0.05, * p<0.1

Table 3 Pearson correlation coefficients of variables in Canadian and US samples

This table reports the Pearson correlation coefficients of variables in Canadian sample below the diagonal and the Pearson correlation coefficients of variables in US sample above the diagonal. $Abret_t$ is the annualized return of firm *i* at year *t* adjusted by the market return at year *t*. ΔC_t is the change of cash plus marketable securities from year *t-1* to year *t*. C_{t-1} is the cash holdings at year *t-1*. ΔE_t is calculated as the change of earnings before extraordinary items plus interest, deferred tax credits and investment tax credits from year *t-1* to year *t*. ΔNA_t is the change in total assets net of cash from year *t-1* to year *t*. $\Delta R\&D_t$ is the change in R&D expense from year *t-1* to year *t* and ΔINT_t is the change of interest expense from year *t-1* to year *t*. ΔDIV_t is defined as the change in dividends paid from year *t-1* to year *t*. LEV_t is calculated by total debt divided by the sum of total debt and market value of equity at year *t*. NF_t is net financing, defined as the total equity issuance minus share repurchases plus debt issuances minus debt redemption at year *t*. *Size* is the market value of equity. All variables are winsorized at 1% and 99%.

	$Abret_t$	ΔC_t	C_{t-1}	ΔE_t	ΔNA_t	$\Delta R\&D_t$	ΔINT_t	ΔDIV_t	LEV_t	NF_t
$Abret_t$	1	0.242***	0.059***	0.209***	0.141***	0.041*	-0.066***	0.081***	-0.2***	0.075***
ΔC_t	0.310***	1	-0.149***	0.155***	-0.05**	0.05**	0.073***	-0.033	-0.038*	0.227***
C_{t-1}	0.128***	-0.0615**	1	0.005	-0.74***	0.016	-0.061**	-0.018	-0.099***	-0.061**
ΔE_t	0.205***	0.160***	0.0889***	1	0.138***	-0.101***	-0.002	0.05**	0.022	-0.061**
ΔNA_t	0.129***	0.0835***	0.0568**	0.110***	1	0.037	0.402***	0.101***	0.191***	0.583***
$\Delta R\&D_t$	0.0402*	0.0174	-0.0017	-0.0698***	0.0129	1	0.023	-0.012	-0.051**	0.089***
ΔINT_t	0.0160	0.0639***	-0.0400*	-0.0188	0.270***	0.0304	1	0.032	0.245***	0.466***
ΔDIV_t	0.0558**	-0.0153	-0.0372	0.0847***	0.202***	0.00546	0.0778***	1	0.001	0.098***
LEV_t	-0.159***	-0.0820***	-0.0629***	-0.0048	0.129***	-0.0350	0.182***	-0.0279	1	0.246***
NF_t	0.138***	0.336***	0.0395*	-0.0848***	0.562***	0.00211	0.203***	0.0694***	0.0967***	1

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4 Regression results of the main regression

This table presents the results of estimating the following regression equation:

$$r_{i,t} - R_t^M = \beta_0 + \beta_1 \Delta C_{i,t} + \beta_2 POST + \beta_3 \Delta C_{i,t} * POST + \beta_4 \Delta C_{i,t} * Mandatory + \beta_5 Mandatory * POST + \beta_6 \Delta C_{i,t} * Mandatory * POST + \sum_{\beta=7}^{16} Control\ variables_{i,t} + \sum_{\beta=17}^{26} Control\ variables_{i,t} * Mandatory + \varepsilon_{i,t}$$

Model 1 includes Canadian firms and Model 2 includes US firms. Model 3 uses matched Canadian and US firms. The matching technique is described in the text. *Post* equals to 1 if the fiscal year *t* of firm *i* begins after Jan 1, 2011 and 0 otherwise. *Mandatory* equals 1 if it is a Canadian public firm and 0 if it is a US public firm. All other variables are as defined in Table 2 and Table 3. The models include country-year fixed effects and firm fixed effects. Standard errors are clustered by firms. t-stats are reported in parentheses below the coefficient estimates.

	CA sample	US sample	Matched
Variables	(1)	(2)	(3)
ΔC_t	1.861***	1.357***	1.263***
	(7.536)	(4.239)	(4.015)
Post	0.0997	-0.0559	-0.0581
	(1.488)	(-1.112)	(-1.169)
ΔC_t*Post*	-0.552**	-0.0469	0.210
	(-2.156)	(-0.142)	(0.636)
ΔC_t*Mandatory*			0.636
			(1.634)
*Mandatory*Post*			0.160*
			(1.909)
ΔC_t*Mandatory*Post*			-0.758**
			(-2.036)
ΔE_t	0.344***	0.277***	0.280***
	(4.724)	(3.553)	(3.585)
ΔNA_t	0.0902***	0.191***	0.187***
	(2.664)	(2.946)	(2.877)
$\Delta R\&D_t$	3.881**	1.749	1.639
	(2.241)	(0.671)	(0.628)
ΔINT_t	0.541	-0.717	-0.765
	(0.707)	(-0.623)	(-0.662)
ΔDIV_t	-0.0279	2.283**	2.343**
	(-0.0640)	(2.164)	(2.222)
LEV_t	-1.114***	-1.336***	-1.333***
	(-11.46)	(-11.47)	(-11.45)
C_{t-1}	0.796***	1.212***	1.210***
	(6.036)	(8.669)	(8.655)
NF_t	0.0936	0.137	0.140
	(1.136)	(1.064)	(1.077)
ΔC_t*C_{t-1}	-1.368**	-0.355	-0.397
	(-1.986)	(-0.588)	(-0.663)
ΔC_t*LEV_t	-1.537**	-0.795	-0.891
	(-2.393)	(-1.045)	(-1.178)

Table 4, continued

	CA sample	US sample	Matched
Variables	(1)	(2)	(3)
ΔE_t *Mandatory*			0.0690
			(0.647)
ΔNA_t *Mandatory*			-0.0982
			(-1.341)
$\Delta R\&D_t$ *Mandatory*			2.333
			(0.743)
ΔINT_t *Mandatory*			1.327
			(0.960)
ΔDIV_t *Mandatory*			-2.372**
			(-2.087)
LEV_t *Mandatory*			0.220
			(1.456)
C_{t-1} *Mandatory*			-0.401**
			(-2.106)
NF_t *Mandatory*			-0.0455
			(-0.296)
$\Delta C_t * C_{t-1}$ *Mandatory*			-0.889
			(-0.962)
$\Delta C_t * LEV_t$ *Mandatory*			-0.653
			(-0.662)
Constant	0.0299	-0.00864	0.0180
	(0.997)	(-0.236)	(0.492)
Observations	2,759	2,807	5,566
R-squared	0.244	0.302	0.262

*** p<0.01, ** p<0.05, * p<0.1

Table 5 Comparability benefit tests

This table presents the results of estimating the following regression equation:

$$r_{i,t} - R_t^M = \beta_0 + \beta_1 \Delta C_{i,t} + \beta_2 POST + \beta_3 \Delta C_{i,t} * POST + \beta_4 \Delta C_{i,t} * Mandatory + \beta_5 Mandatory * POST + \beta_6 \Delta C_{i,t} * Mandatory * POST + \sum_{\beta=7}^{16} Control\ variables_{i,t} + \sum_{\beta=17}^{26} Control\ variables_{i,t} * Mandatory + \varepsilon_{i,t}$$

Model 1 (2) includes Canadian firms with change in uniformity in the 1st (4th) quartile. Model 3 also includes US firms originally matched to Canadian firms in the 4th quartile of the change in uniformity by size and industry. *Post* equals 1 if the fiscal year *t* of firm *i* begins after Jan 1, 2011 and 0 otherwise. *Mandatory* equals 1 if it is a Canadian public firm and 0 if it is a US public firm. All other variables are as defined in Table 2 and Table 3. Models 1 & 2 include firm and year fixed effects, while model 3 also includes country-year fixed effects. Standard errors are clustered by firms. t-stats are reported in parentheses below the coefficient estimates.

Variables	(1) Increase in uniformity in 1st quartile	(2) Increase in uniformity in 4th quartile
ΔC_t	2.002***	2.436***
	(4.933)	(4.070)
Post	-0.590**	0.288**
	(-2.473)	(2.404)
ΔC_t *Post*	-0.619	-1.425***
	(-1.420)	(-3.044)
Constant	-0.116**	0.0649
	(-2.113)	(0.827)
Control variables	Included	Included
Observations	733	365
R-squared	0.339	0.40

*** p<0.01, ** p<0.05, * p<0.1

Table 6 Regression results partitioned by M/B and interest coverage

This table presents the results of estimating the following regression equation:

$$r_{i,t} - R_{i,t}^{M} = \beta_0 + \beta_1 \Delta C_{i,t} + \beta_2 POST + \beta_3 \Delta C_{i,t} * POST + \sum_{\beta=4}^{13} Control\ variables_{i,t} + \varepsilon_{i,t}$$

Model 1 (2) includes firms with Market-to-Book ratios above the median Market-to-Book ratio and interest coverage below (above) the median interest coverage across firms at each year. Model 3 (4) uses firms with Market-to-Book ratios below the median Market-to-Book ratio and interest coverage above (below) the median interest coverage across firms at each year. *Post* equals 1 if the fiscal year *t* of firm *i* begins after Jan 1, 2011 and 0 otherwise. All other variables are as defined in Table 2 and Table 3. The models include firm and year fixed effects. Standard errors are clustered by firms. t-stats are reported in parentheses below the coefficient estimates.

Variables	(1) **High M/B Low Coverage**	(2) **High M/B High Coverage**	(3) **Low M/B High Coverage**	(4) **Low M/B Low Coverage**
ΔC_t	2.277***	3.404***	1.793***	0.973***
	(4.213)	(4.703)	(5.693)	(2.648)
Post	0.115	0.0872	0.0468	0.0356
	(1.358)	(0.733)	(0.242)	(0.363)
$\Delta C_t * Post$	-1.771***	-0.653	-0.237	0.103
	(-2.908)	(-1.028)	(-0.766)	(0.246)
Constant	0.0415	0.0356	-0.171**	-0.145***
	(0.410)	(0.601)	(-1.974)	(-3.763)
Control variables	Included	Included	Included	Included
Observations	700	640	481	853
R-squared	0.329	0.484	0.325	0.221

*** p<0.01, ** p<0.05, * p<0.1

Table 7 Regression predicting firms' cash holdings

This table presents the results of estimating the following regression equation:

$$Cash_{i,t} = \beta_0 + \gamma_1 POST + \gamma_2 Mandatory + \gamma_3 POST * Mandatory + \sum_{\beta=1}^{9} Control\ variables_{i,t}$$
$$+ \sum_{\beta=10}^{18} Control\ variables_{i,t} * POST + \sum_{\beta=1}^{9} Control\ variables_{i,t} * POST * Mandatory + \varepsilon_{i,t}$$

Model 1 includes Canadian firms and Model 2 includes matched Canadian and US firms. The matching technique is described in the text. *Post* equals to 1 if the fiscal year *t* of firm *i* begins after Jan 1, 2011 and 0 otherwise. *Mandatory* equals 1 if it is a Canadian public firm and 0 if it is a US public firm. All other variables are defined in appendix 1. The models include firm and year fixed effects. Standard errors are adjusted for heteroskedasticity. t-stats are reported in parentheses below the coefficient estimates.

Variables	(1)	(2)
Post	-0.0673	0.199
	(-0.910)	(1.414)
*Post*Mandatory*		-0.254*
		(-1.776)
$M/B_{i,t}$	0.0370***	0.0781***
	(4.550)	(3.541)
$Size_{i,t}$	-0.149***	-0.145***
	(-5.223)	(-4.679)
$Cash\ flow_{i,t}$	-0.00622	-0.368
	(-0.0349)	(-1.475)
$Working\ capital_{i,t}$	-0.497***	-0.927***
	(-3.767)	(-4.323)
$Capital\ expenditure_{i,t}$	-0.158***	3.23e-05*
	(-2.971)	(1.906)
$Leverage_{i,t}$	-0.187**	-0.213**
	(-2.146)	(-2.444)
$Cash\ Flow\ sigma_{i,t}$	-0.0135	-0.0461
	(-1.105)	(-1.114)
$R\&D_{i,t}$	0.421	-0.102
	(1.591)	(-0.242)
$Dividend_{i,t}$	0.0426**	0.0326*
	(2.061)	(1.754)
$M/B_{i,t} * Post$	0.0330**	-0.0117
	(2.354)	(-0.424)
$Size_{i,t} * Post$	0.00971	-0.00464
	(1.460)	(-0.277)
$Cash\ flow_{i,t} * Post$	0.403**	-0.266
	(2.046)	(-0.990)
$Working\ capital_{i,t} * Post$	0.0915	-0.0517
	(0.860)	(-0.253)
$Capital\ expenditure_{i,t} * Post$	0.127*	1.80e-05
	(1.781)	(0.784)
$Leverage_{i,t} * Post$	0.0912	-0.0718
	(1.390)	(-0.709)

Table 7, continued

Variables	(1)	(2)
$Cash\ Flow\ sigma_{i,t} * Post$	-0.106***	-0.266
	(-3.109)	(-1.263)
$R\&D_{i,t} * Post$	-0.201	-0.0349
	(-0.734)	(-0.0867)
$Dividend_{i,t} * Post$	-0.0254	-0.0661**
	(-1.329)	(-2.537)
$M/B_{i,t} * Post * Mandatory$		0.0269
		(1.056)
$Size_{i,t} * Post * Mandatory$		0.0126
		(0.714)
$Cash\ flow_{i,t} * Post * Mandatory$		0.952***
		(5.364)
$Working\ capital_{i,t} * Post * Mandatory$		0.263
		(1.112)
$Capital\ expenditure_{i,t} * Post * Mandatory$		-0.0272
		(-0.641)
$Leverage_{i,t} * Post * Mandatory$		0.152
		(1.500)
$Cash\ Flow\ sigma_{i,t} * Post * Mandatory$		0.184
		(0.898)
$R\&D_{i,t} * Post * Mandatory$		0.155
		(0.490)
$Dividend_{i,t} * Post * Mandatory$		0.0362
		(1.150)
Constant	0.347***	0.232
	(4.471)	(1.389)
Observations	2,215	3,835
R-squared	0.828	0.946

*** p<0.01, ** p<0.05, * p<0.1

Table 8 Regression results after controlling for corporate governance

This table presents the results of estimating the following regression equation:

$$r_{i,t} - R^{M}_{i,t} = \beta_0 + \beta_1 \Delta C_{i,t} + \beta_2 POST + \beta_3 \Delta C_{i,t} * POST + \beta_4 Dual + \beta_5 Dual * Post + \beta_6 \Delta C_{i,t} * Dual + \beta_7 \Delta C_{i,t} * Dual * POST + \sum_{\beta=8}^{17} Control\ variables_{i,t} + \varepsilon_{i,t}$$

Model 1 (2) includes Canadian firms with (without) dual-class shares while Model 3 uses all Canadian firms. *Post* equals 1 if the fiscal year *t* of firm *i* begins after Jan 1, 2011 and 0 otherwise. *Dual* is a dummy variable equal to 1 if a firm has dual-class shares and 0 if not. All other variables are as defined in Table 2 and Table 3. The models include industry and year fixed effects. Standard errors are clustered by firms. t-stats are reported in parentheses below the coefficient estimates.

Variables	(1) **Dual-class share**	(2) **Non dual-class share**	(3) **Whole sample**
ΔC_t	-0.264	1.626***	1.569***
	(-0.500)	(6.634)	(6.855)
Post	-0.0780	0.160**	0.106*
	(-0.766)	(2.190)	(1.674)
ΔC_t **Post*	0.319	-0.450	-0.478*
	(0.522)	(-1.642)	(-1.741)
Dual			-0.0245
			(-0.720)
*Dual*Post*			0.0853*
			(1.873)
ΔC_t **Dual*			-1.057**
			(-2.010)
ΔC_t **Dual*Post*			1.207
			(1.349)
Constant	0.042	0.0031	0.015
	(0.55)	(0.07)	(0.34)
Control variables	Included	Included	Included
Observations	403	2,356	2,759
R-squared	0.209	0.243	0.228

*** p<0.01, ** p<0.05, * p<0.1